

Operation & Monitoring of Trans-Alaska Pipeline

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Operation

- *Operating Gradients*
- *Minimum Required Pressure Criteria (MOP)*

FIGURE 1
2.10 MMBPD Hydraulic Gradient

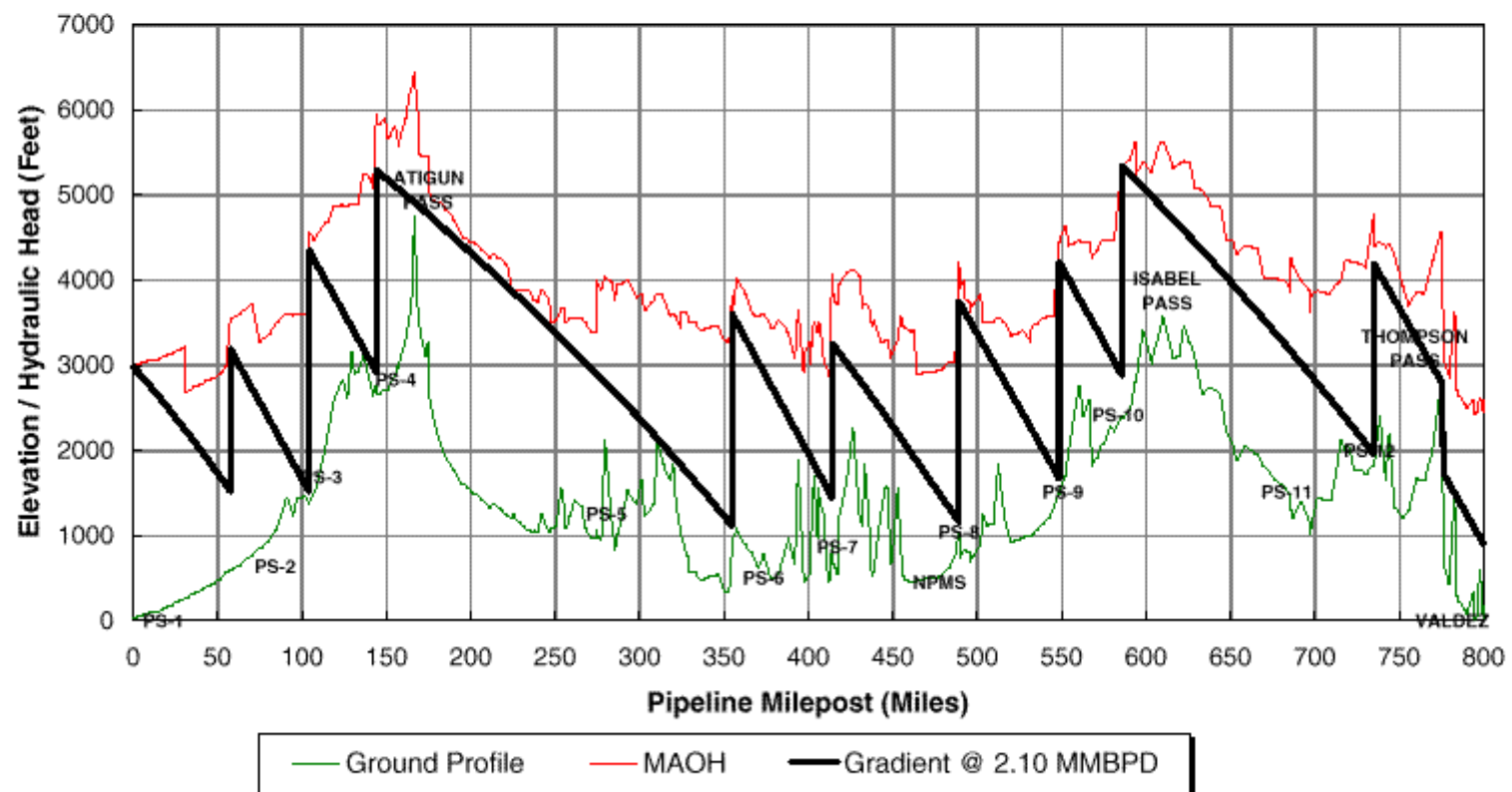


FIGURE 2
1.10 MMBPD Hydraulic Gradient

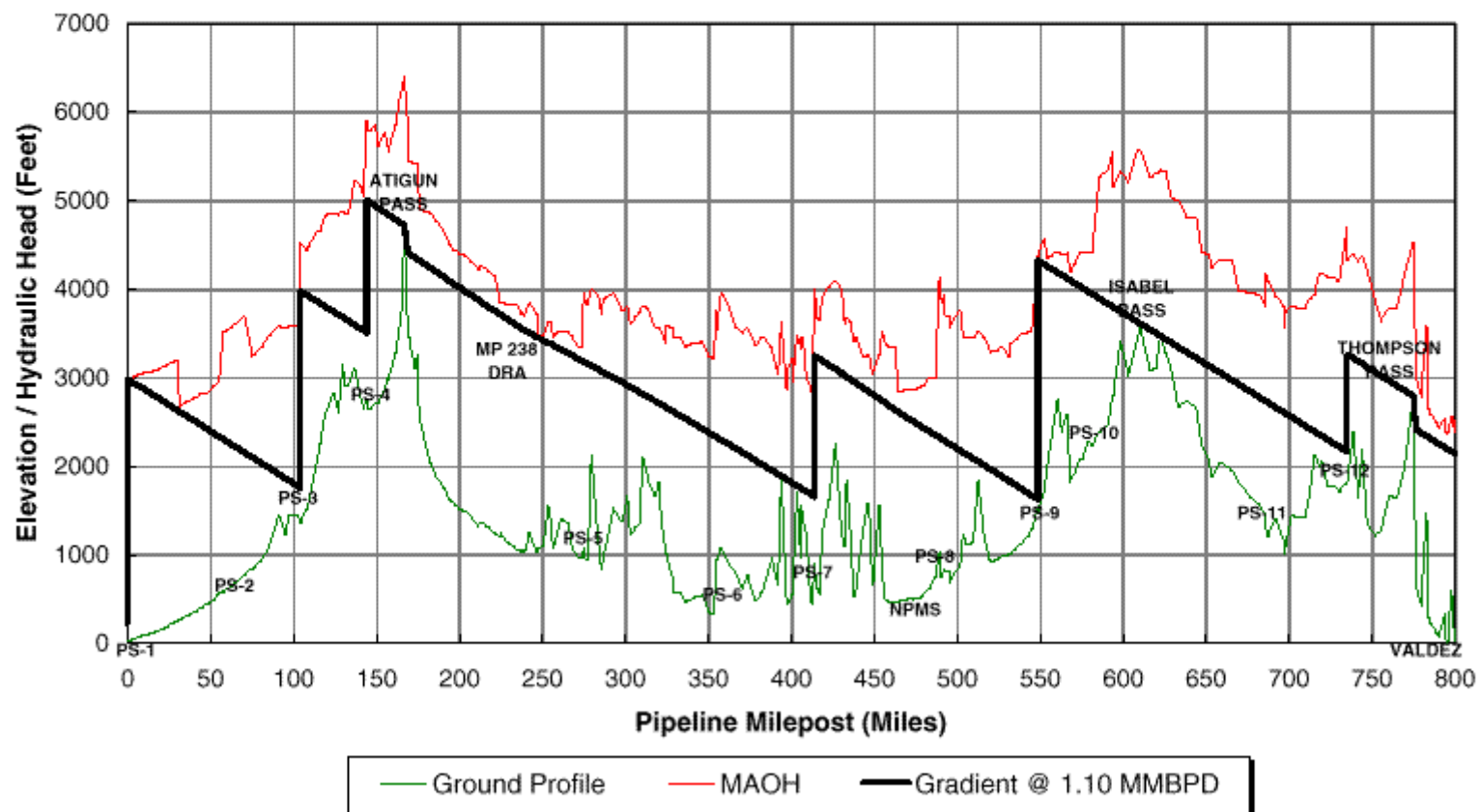


FIGURE 3
0.96 MMBPD Hydraulic Gradient

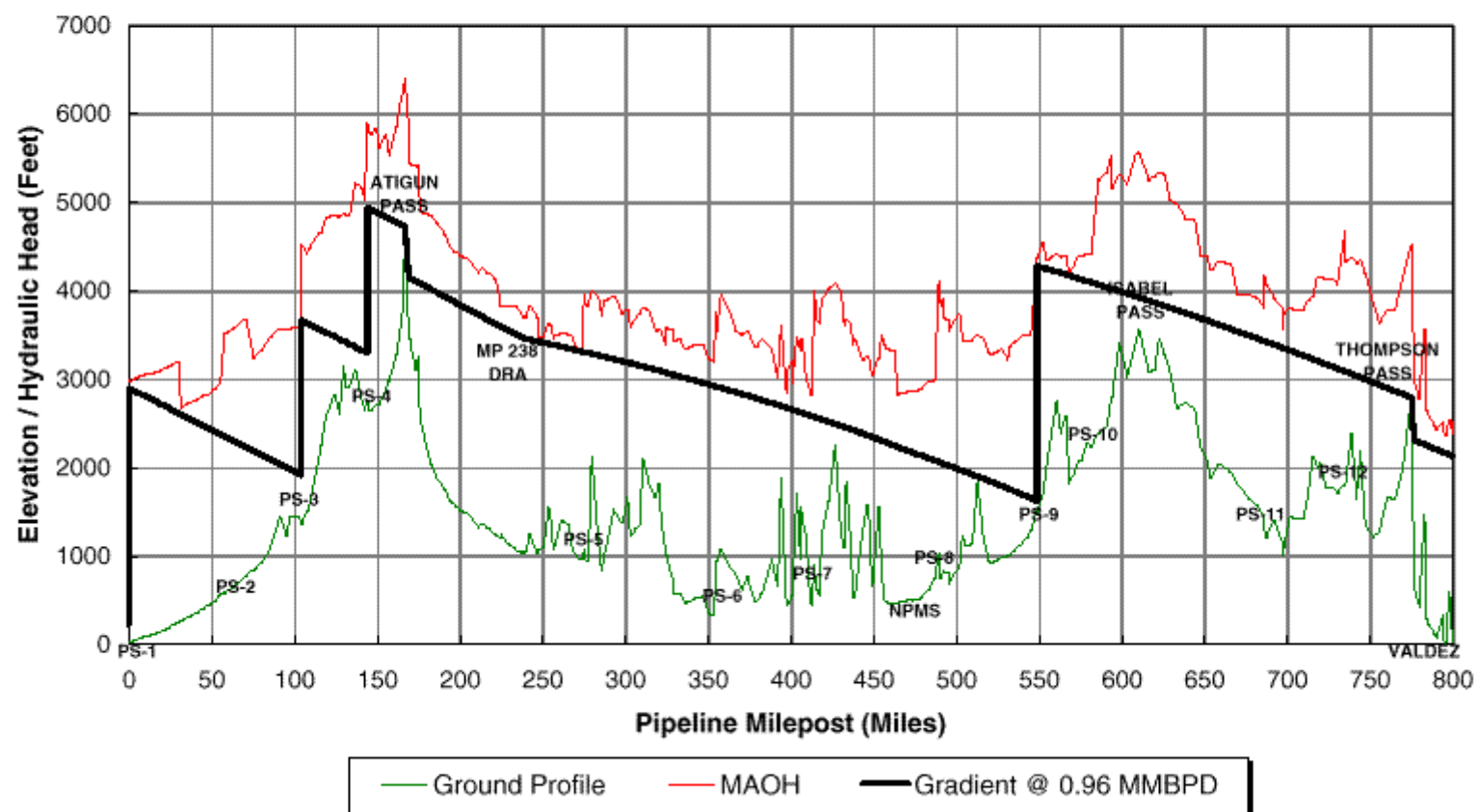


FIGURE 4
0.30 MMBPD Hydraulic Gradient

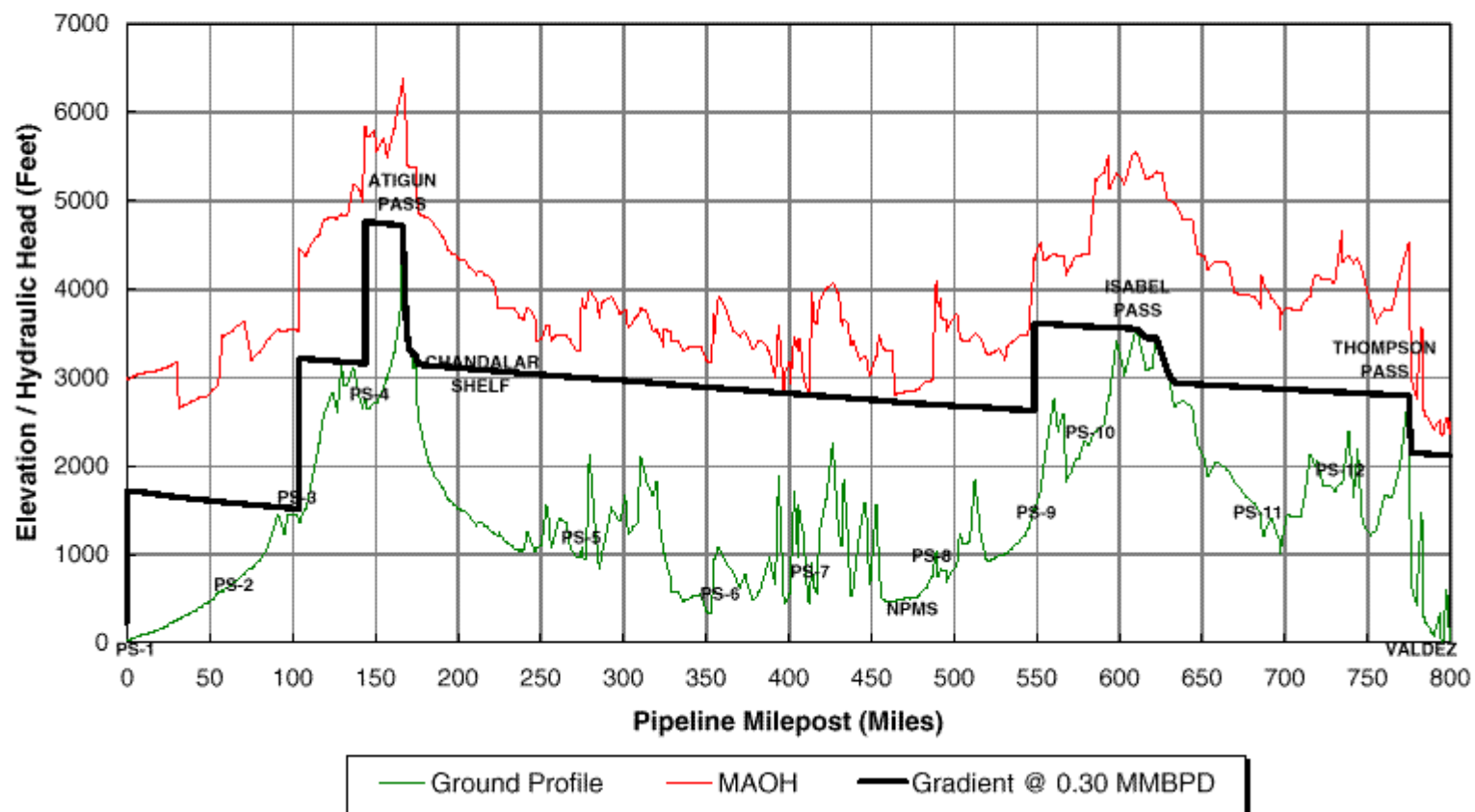
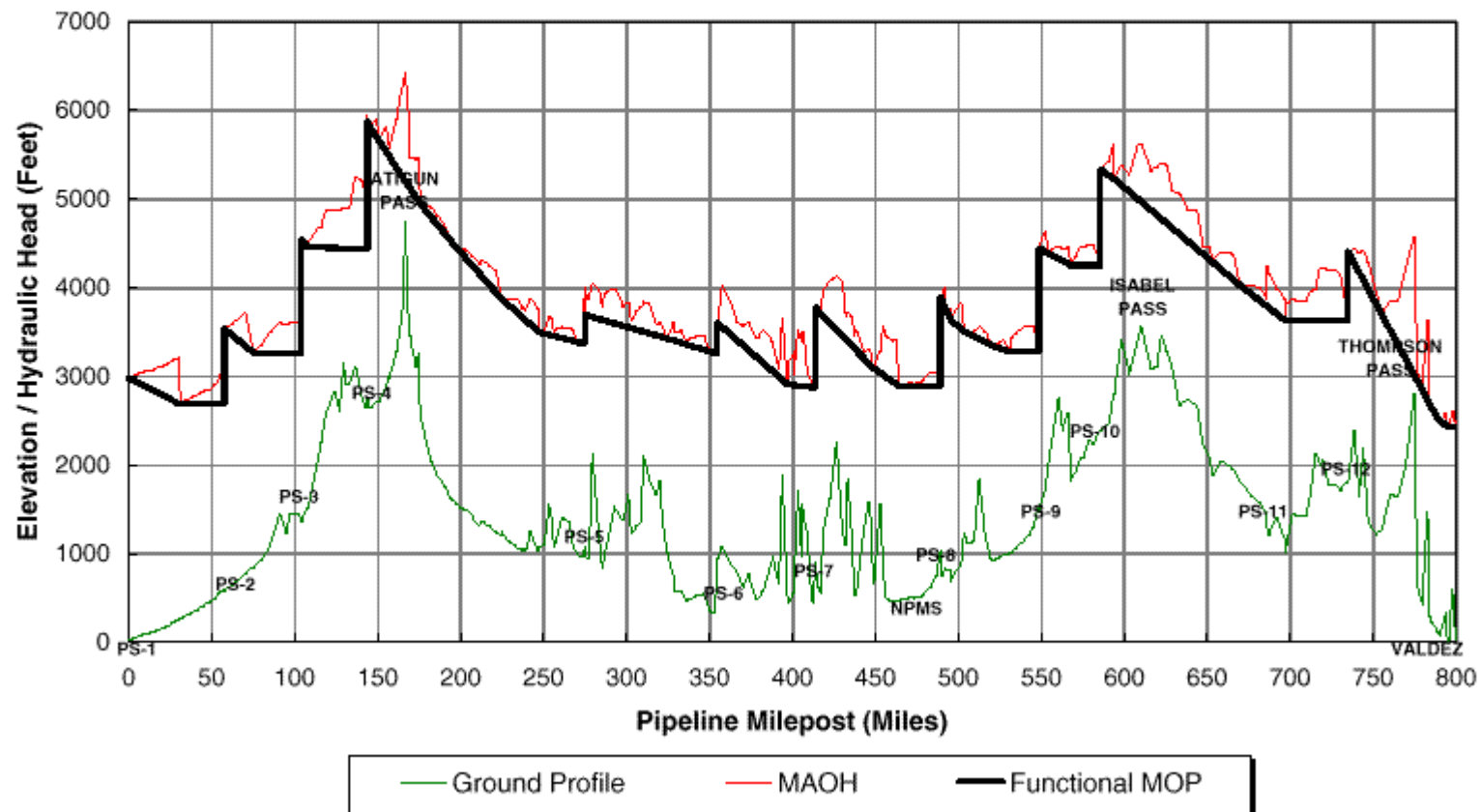


FIGURE 5
Functional Maximum Operating Pressure (MOP)



Monitoring

- *Settlement*
- *Corrosion*
- *Data Analysis*

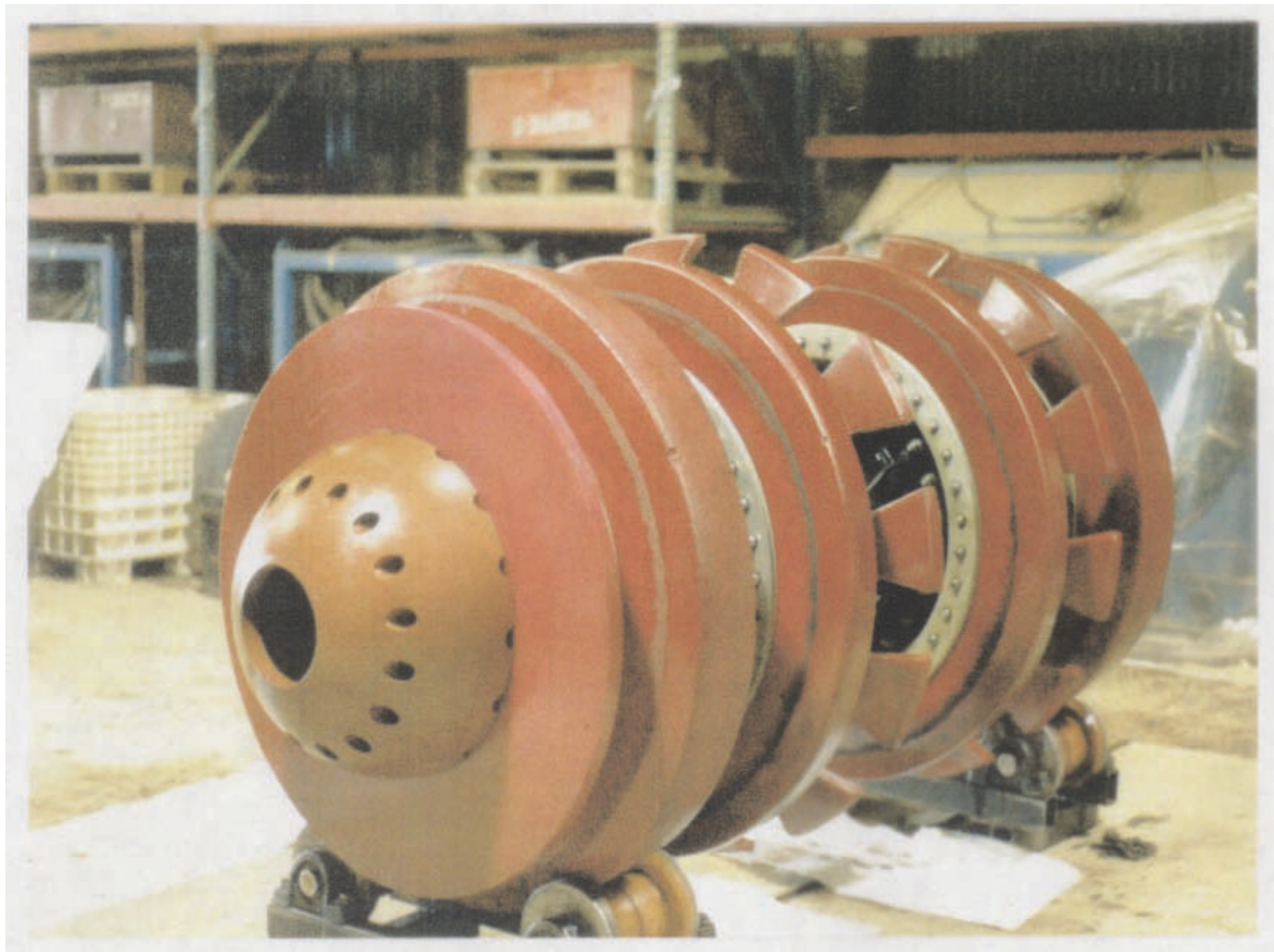
Monitoring

- *Settlement*
 - *Curvature Pig*



Monitoring

- *Settlement*
 - *Curvature Pig*
 - *Deformation Pig*



Monitoring

■ *Settlement*

- *Curvature Pig*
- *Deformation Pig*
- *Thermistors*
- *Monitoring Rods*

Monitoring

■ *Corrosion*

- *Ultrasonic Pig*
 - *Prioritize Digs & Visual Inspection*



Monitoring

■ *Corrosion*

- *Ultrasonic Pig*
 - *Prioritize Digs & Visual Inspection*
- *Cathodic Protection (CP) Readings*
- *Corrosion Coupons*

Monitoring

■ *Data Evaluation*

- *Pressure De-rates (Rstreng)*
 - *Rstreng Analysis of Visual Inspection*
- *Sleeve to Maintain MOP*
- *Buckling Analysis*
 - *Curvature / Corrosion - SAFE Program*

Summary

- *State of the Art monitoring tools combined with data evaluation by experienced personnel ensure that the MOP requirements are maintained for all operating scenarios of the Trans-Alaska Pipeline*